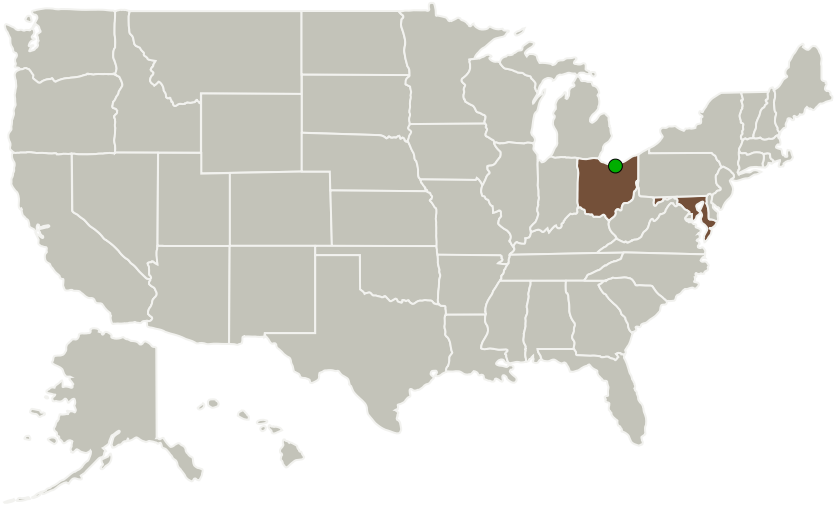
Security-Enhanced Autonomous Network Management for Space Networking, Phase I

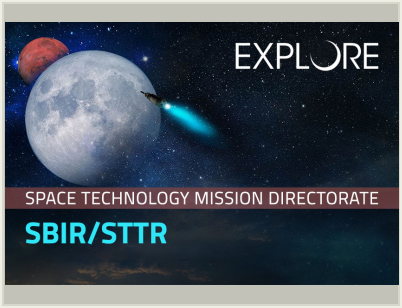
Completed Technology Project (2011 - 2011)

Project Introduction

Intelligent Automation Inc. (IAI) proposes an innovative Security-Enhanced Autonomous Network Management (SEANM) scheme for reliable communication in space networking. The SEANM scheme allows the system to adaptively reconfigure its network elements based upon awareness of network conditions, policies, and mission requirements. Existing network management tools in space networking are generally focused on specific missions and/or domains and hence do not provide an integrated and consistent solution for the future NASA space networks. Moreover, to reduce operation costs, autonomous network management is necessary. However, the related research and implementations are still at early stage and demands further investigation. In addition, due to the inherent characteristics of space networks, security aspects that are valid in the traditional networks are not fully suitable to space networks. A novel network management solution with advanced scalability and security is necessary for heterogeneous space networks. The objective of the proposed SEANM scheme is to develop an autonomous network management system so as to provide reliable and efficient support for the science and exploration mission in the future NASA space networks.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
Intelligent Automation, Inc.	Lead Organization	Industry	Rockville, Maryland
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
Maryland	Ohio

Project Transitions

February 2011: Project Start

September 2011: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140183)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Intelligent Automation, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

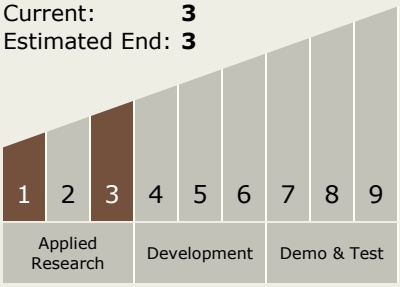
Carlos Torrez

Principal Investigator:

Hui Zeng

Technology Maturity (TRL)

Start: **1**
Current: **3**
Estimated End: **3**



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Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
  - TX05.5 Revolutionary Communications Technologies
    - TX05.5.1 Cognitive Networking

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System